



Disaster and Emergency Management Resources

Nuclear Accidents

Although construction and operation of nuclear power plants are closely monitored and regulated by the Nuclear Regulatory Commission (NRC), an accident, though unlikely, is possible. The potential danger from an accident at a nuclear power plant is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume (cloud-like) formation. The size of the area

affected is determined by the amount of radioactive material released from the plant, wind direction and speed, and weather conditions (i.e., rain, snow, etc.), which would quickly drive the radioactive material to the ground, causing increased deposition of radionuclides. Contamination could affect areas up to 50 miles from the accident site. While there are no nuclear power plants in West Virginia, the state is not immune to the threat of exposure from accidents involving nuclear energy. Of the five bordering states, four have nuclear power reactors (MD, OH, PA, and VA), three have non-power nuclear reactors (MD, OH, and PA), and two have nuclear fuel manufacturing facilities (KY and VA) (U.S. NRC, 2003 and U.S. NRC, 2002). Only one of these facilities is within 50 miles of West Virginia's border: the Beaver Valley Nuclear plant in Pennsylvania. This plant is within 10 miles of Hancock County and within 50 miles of Brooke, Ohio, and Marshall counties.

Radiological accidents can occur wherever radioactive materials are used, stored, or transported. In addition to nuclear power plants, hospitals, universities, research laboratories, industries, major highways, railroads, and shipping yards could be the site of a radiological accident. In West Virginia, there are no nuclear power reactors, no non-power nuclear reactors, no nuclear fuel manufacturing facilities, and no storage facilities for nuclear waste. However, as discussed in the preceding section on Hazardous Materials, West Virginia has a large transportation network consisting of major highways, airports, waterways, and railroads. Consequently, many in the state are at risk from a major transportation accident involving nuclear material.

Hazard Terminology

Nuclear Accident – generally refers to events involving the release of significant levels of radioactivity or exposure of workers or the general public to radiation.

Radioactive materials--if handled improperly--or radiation accidentally released into the environment can be dangerous because of the harmful effects of certain types of radiation on the body. The longer a person is exposed to radiation and the closer the person is to the radiation, the greater the risk. Protection in a nuclear emergency comes from distance (the more distance from the radiation, the better), shielding (protection using heavy materials that absorb radiation), and time (radiation loses its intensity rapidly). While radiation cannot be distinguished by the human senses (sight, smell, etc.), scientists with sophisticated instruments that are able to detect even the smallest levels of radiation. To date, there have been no incidents involving nuclear materials within West Virginia. If a release of harmful radiation-producing materials occurs, authorities from federal and state governments and the responsible utility will monitor radioactivity levels to determine the potential danger to the public. FEMA has established the Radiological Emergency Preparedness (REP) Program to ensure that the public health and safety of citizens would be adequately protected in the event of radiological emergencies outside of nuclear facilities. REP covers the possible threats to West Virginia.

From the West Virginia All Hazard Mitigation Plan, West Virginia Office of Emergency Services